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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,866	11/26/2003	Graham Strachan	3901.US.P	6091

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EXAMINER
SONI, KETAN S

ART UNIT	PAPER NUMBER
2619	

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12/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/721,866	STRACHAN ET AL.
	Examiner	Art Unit	
	Ketan Soni	2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _17 September 2007_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-5_ is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-5_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some * c)☐ None of:

　　　1.☐ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
　　Paper No(s)/Mail Date _04/07/2004_.

4) ☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

- Applicant's Amendment filed on 09/17/2007 has been acknowledged.

- Claims 1, 4, and 5 are amended.

- This action is made FINAL.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the Examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 - 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ivaturi (US6873603 B1)** in view of **Gallo et al. (US 6907469 B1).**

Consider **claim: 1** (currently amended), Ivaturi discloses a method of operating a network switch which is an edge switch in an Ethernet communication network having a multiplicity of sub-nets (a switch may operate in Layer 2 or in Layer 3, col: 15, lines: 36), is arranged to receive and forward packets which include media access control, address data and network address data, and is in communication with a core router via an uplink, (DLSw router 2 receives its updates with the MAC address, col: 5, lines: 27-32, and col: 7, lines: 4-9)comprising:

performing a network address look-up in respect of packet, which is received by the edge switch from a source local to the edge switch and on a first sub-net and only if the packet has a media access control destination address of the core router (DLSw router2, receives update with the MAC address of A, col: 5, lines: 27-30; and MAC address of the bridge is read from the SA field of the MAPP request frame, which (MAPP) is received by all end stations connected to the LAN, col: 9, lines: 18-20);

forwarding the packet directly towards its destination in response to the network destination address data in the packet, without the packet traversing the core router via the uplink, when the network destination address is a destination local to the edge switch, but on a second sub- net (bridge receives a MAPP request from each station which responds to the broadcast, col:9, lines: 22-35; MAPP table contains entry for each end station which can be reached on LOCAL LANs by the bridge, which is a layer 2 device, col: 10, lines: 32-35); and forwarding the packet from the edge switch to the

core router via the <u>uplink</u> (MAPP broadcasts Destination Address, col: 8, lines: 55).

Even though Ivaturi discloses forwarding packet from layer 2 device to core router by

broadcasting, is generally silent about forwarding the packet from the edge switch to the

core router via the <u>uplink</u>, whenever the <u>network destination</u> address is a destination

<u>that</u> is not local to the edge switch; and edge switch maintaining look-up tables of media

access control addresses and network addresses only for local sources and

destinations on both the first and second sub-nets.

In the same field of endeavor, Gallo et al. discloses forwarding the packet from

the edge switch to the core router via the <u>uplink</u>, whenever the <u>network destination</u>

address is a destination <u>that</u> is not local to the edge switch (If the frame needs L3

processing it is sent to the logical router 208, column: 3, Lines: 30-31; (The look-up on

the (destination address) DA determined where the frame needs L3 processing or not

by the logical router 208, column: 3, Lines: 25-27); A status bit the MAC address

database in the entry will indicate that if the frame is destined for a particular MAC

address, it is L3 traffic, column: 3, Lines: 28-30);

and edge switch maintaining look-up tables of media access control addresses and

network addresses only for local sources and destinations on both the first and second

sub-nets (A network switch connects multiple virtual LANs (VLANs) and process frames

for transfer within a VLAN or between VLANs. The L2 protocol is used for frame

transfers within a VLAN, column: 1, lines: 35-37).

There for it would have been obvious to a person with ordinary skill in the art at

the time the invention was made to incorporate a method of operating a network switch

in the communication control statement for connecting network and other sub network

as taught by Furuichi in the method of Gallo et al. for the network switch that is capable

to connect multiple virtual LANs (VLANs) and process frames for transfer within a

particular VLAN (Layer-2 bridging) or between the VLANs using the MAC database

address.

Consider **claim: 2**, and as applied to the method of claim 1, Ivaturi as modified

by Gallo discloses the method of claim: 1. Further taught by combination, and

specifically by Ivaturi wherein the network switch forwards the packet to the core router

in response to media access control data in the packet (MAC address population

protocol constructed with a broadcast destination address, col: 10, lines: 26-27).

Consider **claim: 3**, and as applied to the method of claim 1, Ivaturi as modified

by Gallo discloses the method of claim: 1. Further taught by combination and

specifically by Gallo wherein the network switch provides a default route to the core

router for network destination addresses which are not local to the network switch (If the

frame needs L3 processing it is sent to the logical router 208, column: 3, Lines: 30-31;

(The look-up on the (destination address) DA determined where the frame needs L3

processing or not by the logical router 208, column: 3, Lines: 25-27); A status bit the

MAC address database in the entry will indicate that if the frame is destined for a

particular MAC address, it is L3 traffic, column: 3, Lines: 28-30).

Consider **claim: 4**, (currently amended) Ivaturi discloses a network <u>edge</u> switch

having ports for the reception and forwarding of Ethernet packets which include media

access control address data and network address data (a switch may operate in Layer 2

or in Layer 3, col: 15, lines: 36; and MAC address of the bridge is in the SA field of the

MAPP request frame, col: 9, lines: 18-20) and organized:

(a) to perform a media access control address look-up in respect of a first packet

received by the <u>edge</u> switch (DLSw router2, receives update with the MAC address of

A, col: 5, lines: 27-30; and MAC address of the bridge is read from the SA field of the

MAPP request frame, MAPP is received by all end stations connected to the LAN, col:

9, lines: 18-20);

(b) to bridge the packet if a source and a destination of the packet are on a <u>same</u>

subnet and local to the edge switch (Bridge connects local end stations, and they are

responded by MAPP protocol, col: 10, lines: 32-35). However Ivaturi is generally silent

about performing a network destination address look-up in respect of a second, packet

which is received by the edge switch t'rom a source local to the edge switch and on. a

first sub-net and has a network destination address on a second sub-net, the network

destination address look-up performed only if the media access control destination

address of the second packet is to a core router connected to the edge switch by an

uplink, forwarding said second packet directly towards its destination in response to

network address data in said second packet when the destination thereof is a local

destination; and forwarding said second packet from the edge switch by a default route,

in response to media access control address data in said second packet, if the

destination thereof is not local to the edge switch, said edge switch having took-up

tables of media access control addresses and network addresses fbr local sources and

destinations on both the first and second sub- nets.

In the same field of endeavor, Gallo discloses performing a network destination

address look-up (Fig: 4, Look up DA in MAC D/B- 401) in respect of a second, packet

which is received by the edge switch from a source local to the edge switch and on. a

first sub-net and has a network destination address on a second sub-net, the network

destination address look-up performed only if the media access control destination

address (Fig: 4, Look up DA in MAC D/B- 401) of the second packet is to a core router

connected to the edge switch by an uplink (Network data frames such as frame 202

enter the switch (frame or packet to be sent on L-2 (1st subnet) or L-3 (2nd subset)) from

a physical medium through a plurality of ports 212 in the NPs, column: 3, lines: 8-10; If

the frame needs L3 (2nd subset) processing it is sent to the logical router 208, column:

3, Lines: 30-31; (The look-up on the (destination address) DA determined where the

frame needs L3 processing or not by the logical router 208, column: 3, Lines: 25-27); A

status bit the MAC address database in the entry will indicate that if the frame is

destined for a particular MAC address, it is L3 traffic, column: 3, Lines: 28-30); (d) to

forward said second packet directly towards its destination in response to network

address data in said second packet when the destination thereof is a local destination

(L2 processing typically comprises a look-up for the destination address (DA) in the

frame in the MAC address database 210, to determine whether to filter, flood, or forward

the frame, column: 3, Lines: 11-14); and

(e) to forward said second packet from the edge switch by a default route, in

response to media access control address data in said second packet, if the destination

thereof is not local to the edge switch, said edge switch having took-up tables of media

access control addresses and network addresses fbr local sources and destinations on

both the first and second sub- nets (Network data frames such as frame 202 enter the

switch (frame or packet to be sent on L-2 (1st subnet) or L-3 (2nd subset) from a physical

medium through a plurality of ports 212 in the NPs, column: 3, lines: 8-10; The look-up

on the DA in the frame will also determine whether the frame needs L3 processing by

the logical router (default route) 208, column: 3, lines: 25-26; The logical bridge in the

NP performs L2 processing of the frame, including MAC address learning. As shown in

blocks 308-311, to do the learning, the SA in the frame is looked up in the local MAC

address table. If it is already present, the frame is sent to its destination, the CP. If not,

the SA and its port of origin is added to the MAC address database, and the frame is

sent to the CP, column: 4, lines: 11-15; If the frame needs L3 processing it is sent to the

logical router 208, column: 3, Lines: 30-31; (The look-up on the (destination address)

DA determined where the frame needs L3 processing or not by the logical router 208,

column: 3, Lines: 25-27); A status bit the MAC address database in the entry will

indicate that if the frame is destined for a particular MAC address, it is L3 traffic, column:

3, Lines: 28-30).

Consider **claim: 5** (currently amended) Ivaturi discloses a combination of a core

router and an edge switch (In modern computer systems both a bridge function and a

router function are built within one hardware box, col: 1, lines: 38-39; and Bridges 104,

106, 108 normally bridge packets at the layer 2 level, however the bridge functions may

be incorporated as elements of a Router. A Router normally operates at Layer 3 level

of communications protocol, however, many modern day Routers include a bridging

function, col: 7, lines: 14-19): connected by an uplink, (Bridge 106 is illustrated as

connected at its port 112A to a DLSw function internal to the bridge, and externally port

112A connects to link 112 as a TCP/IP connection to IP network cloud 102, col: 7, lines:

19-21) for the reception and forwarding of Ethernet packets, wherein edge switch is

organized (a) performing a media access control address look-up in respect of a first

packet received by the edge switch (DLSw router2, receives update with the MAC

address of A, col: 5, lines: 27-30; and MAC address of the bridge is read from the SA

field of the MAPP request frame, MAPP is received by all end stations connected to the

LAN, col: 9, lines: 18-20); (b) to bridge said first packet when the media access control

source and a destination addresses of the packet are for devices on a same subnet and

local to the edge switch (Bridge connects local end stations, and they are responded by

MAPP protocol, col: 10, lines: 32-35). However Ivaturi is generally silent about

performing a network destination address look-up in respect of a second packet which

is received by the edge switch from a source local to the edge switch and on a first sub-

net and has a destination on a second sub-net wherein the network destination address

look-up is performed only if the media access control destination address of the packet

is the core router media access control address; forwarding second packet directly

towards its destination in response to network address data in said second packet when

the destination thereof is a local destination; and forwarding second packet to core router via the uplink, from the edge switch, in response to media access control address data in said second packet, if the destination thereof is not local to the edge switch, said edge switch having look-up tables of media access control addresses and network addresses only for sources and destinations local to the edge switch on both the first and second sub-nets.

In the same field of endeavor, Gallo discloses performing a network destination address look-up (Fig: 4, Look up DA in MAC D/B- 401) in respect of a second packet which is received by the edge switch from a source local to the edge switch and on a first sub-net and has a destination on a second sub-net wherein the network destination address look-up (Fig: 4, Look up DA in MAC D/B- 401) is performed only if the media access control destination address of the packet is the core router media access control address (Fig: 4, Look up DA in MAC D/B- 401) of the second packet is to a core router connected to the edge switch by an uplink (Network data frames such as frame 202 enter the switch (frame or packet to be sent on L-2 (1st subnet) or L-3 (2nd subset)) from a physical medium through a plurality of ports 212 in the NPs, column: 3, lines: 8-10; If the frame needs L3 (2nd subset) processing it is sent to the logical router 208, column: 3, Lines: 30-31; (The look-up on the (destination address) DA determined where the frame needs L3 processing or not by the logical router 208, column: 3, Lines: 25-27); A status bit the MAC address database in the entry will indicate that if the frame is destined for a particular MAC address, it is L3 traffic, column: 3, Lines: 28-30); (d) to forward said second packet directly towards its destination in response to network

address data in said second packet when the destination thereof is a local destination

(L2 processing typically comprises a look-up for the destination address (DA) in the

frame in the MAC address database 210, to determine whether to filter, flood, or forward

the frame, column: 3, Lines: 11-14); and

(e) to forward said second packet to said core router via the uplink, from the edge

switch, in response to media access control address data in said second packet, if the

destination thereof is not local to the edge switch, said edge switch having look-up

tables of media access control addresses and network addresses only for sources and

destinations local to the edge switch on both the first and second sub-nets (Network

data frames such as frame 202 enter the switch (frame or packet to be sent on L-2 (1st

subnet) or L-3 (2nd subset) from a physical medium through a plurality of ports 212 in

the NPs, column: 3, lines: 8-10; The look-up on the DA in the frame will also determine

whether the frame needs L3 processing by the logical router (default route) 208,

column: 3, lines: 25-26; The logical bridge in the NP performs L2 processing of the

frame, including MAC address learning. As shown in blocks 308-311, to do the

learning, the SA in the frame is looked up in the local MAC address table. If it is already

present, the frame is sent to its destination, the CP. If not, the SA and its port of origin

is added to the MAC address database, and the frame is sent to the CP, column: 4,

lines: 11-15; If the frame needs L3 processing it is sent to the logical router 208,

column: 3, Lines: 30-31; (The look-up on the (destination address) DA determined

where the frame needs L3 processing or not by the logical router 208, column: 3, Lines:

25-27); A status bit the MAC address database in the entry will indicate that if the frame

is destined for a particular MAC address, it is L3 traffic, column: 3, Lines: 28-30).

Response to Arguments

Applicant's arguments filed on Sep 17, 2007 with respect to claims: 1-5 have

been fully considered but they are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP §

706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR

1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to

Applicant's disclosure.

❑   Callon et al. (U.S. Patent/ PG PUB # 5251205) discloses: Brouter and Multiple

Protocol Routing.

❑   Kanuri et al. (U.S. Patent/ PG PUB # 7079537) discloses: Layer-3 switching logic architecture in an integrated network switch.

❑   Yim (U.S. PG PUB # US 2002/0052972 A1) discloses: Communication method for VLAN in internet protocol subnet involves transmitting unicast packet from source host to destination host using MAC address included in response packet received from the destination host.

❑   Shah (U.S. PG PUB # US 2004/0088389 A1) discloses: Methods and apparatus for automated edge device

❑   Creedon et al. (U.S. Patent # US 5987507) discloses: Multi-port communication network device with threshold control of port packet counters.

❑   Wilson et al. (U.S. Patent # US 6470025 B1) discloses: System for providing fair access for VLANs to a shared transmission medium.

Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ketan Soni whose telephone number is (571) 270-1782. The Examiner can normally be reached on Monday-Thursday from 7:30am to 6:00pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Vu, Huy D. can be reached on 571-272-3155. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.
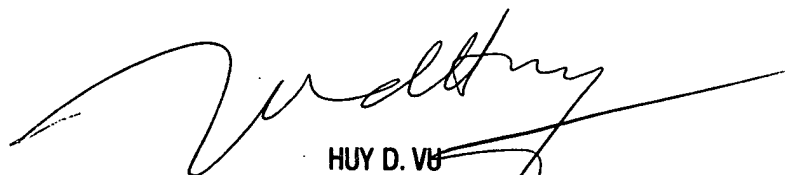
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028. If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

Ketan Soni

ks

Nov 29, 2007.

HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600